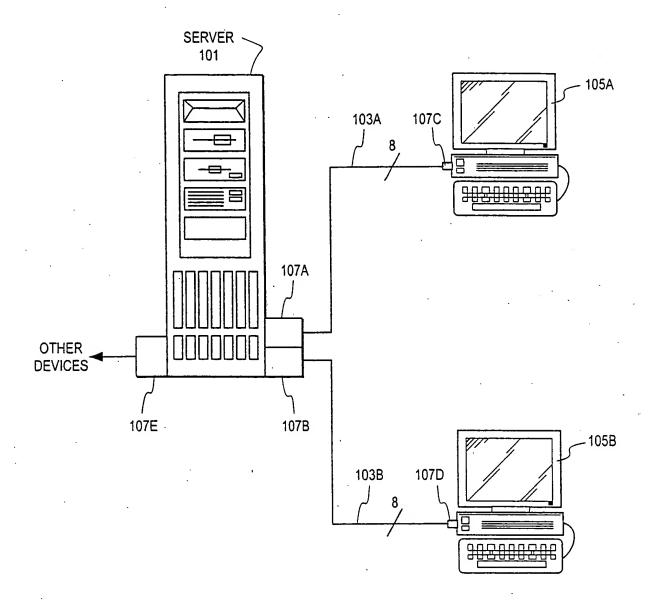
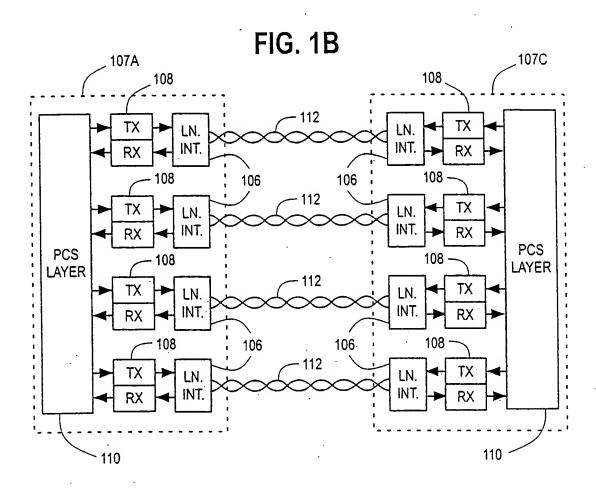
TITLE: GIGABIT ETHERNET TRANSCEIVER WIT ANALOG FRONT END INVENTOR: BEHZAD APPLICATION NO.: UNASSIGNED, CONF. NO. ; DOCKET NO. 13432US06 ATTORNEY: JAW, PHONE: 312-775-8000

FIG. 1A

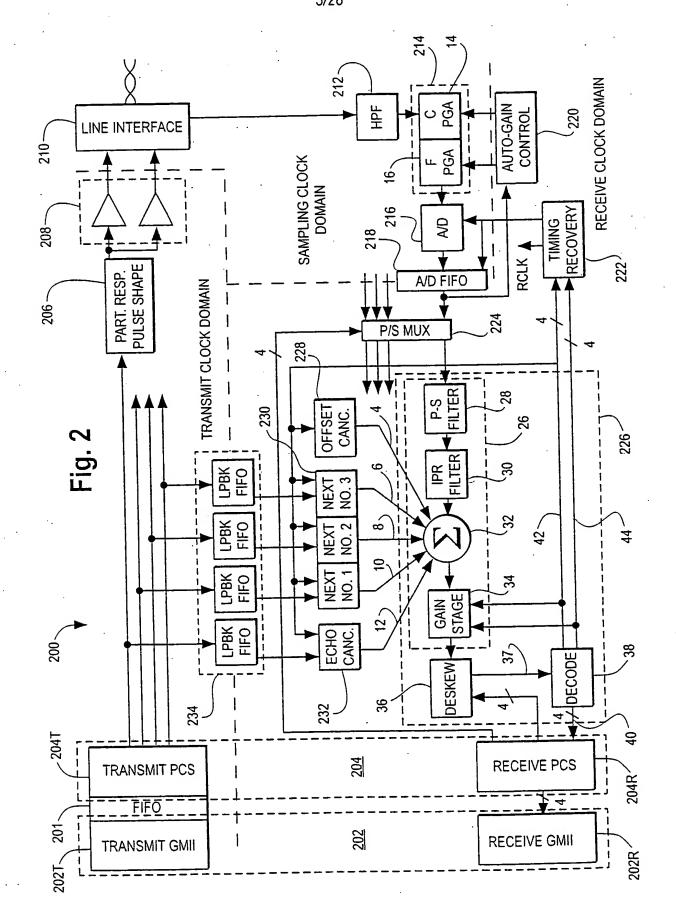


TITLE: GIGABIT ETHERNET TRANSCEIVER WIT ANALOG FRONT END INVENTOR: BEHZAD

APPLICATION NO.: UNASSIGNED, CONF. NO. ; DOCKET NO. 13432US06 ATTORNEY: JAW, PHONE: 312-775-8000

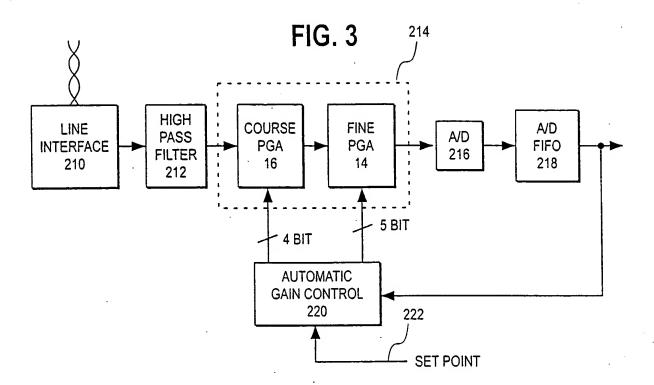


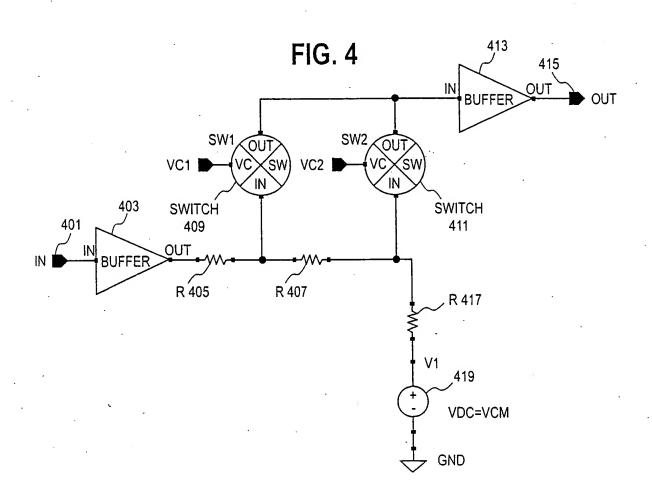
TITLE: GIGABIT ETHERNET TRANSCEIVER WIT ANALOG FRONT END
INVENTOR: BEHZAD
APPLICATION NO.: UNASSIGNED,
CONF. NO. ; DOCKET NO. 13432US06
ATTORNEY: JAW, PHONE: 312-775-8000



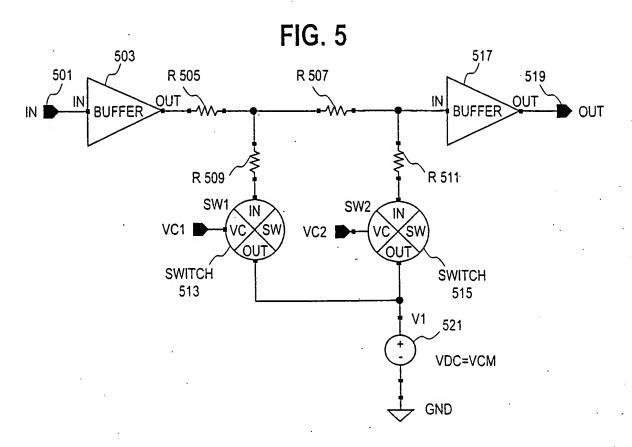
TITLE: GIGABIT ETHERNET TRANSCEIVER WIT ANALOG FRONT END INVENTOR: BEHZAD

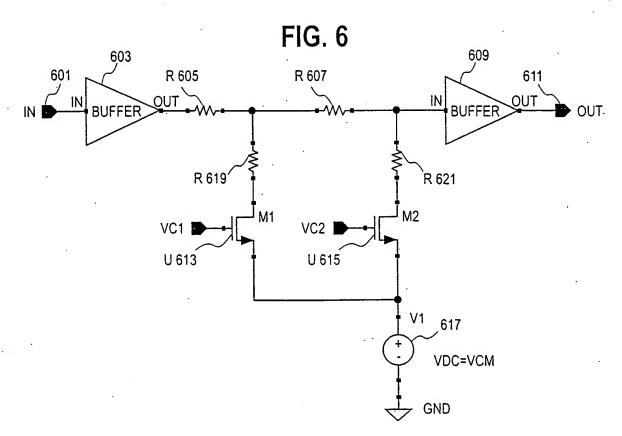
APPLICATION NO.: UNASSIGNED, CONF. NO. ; DOCKET NO. 13432US06 ATTORNEY: JAW, PHONE: 312-775-8000



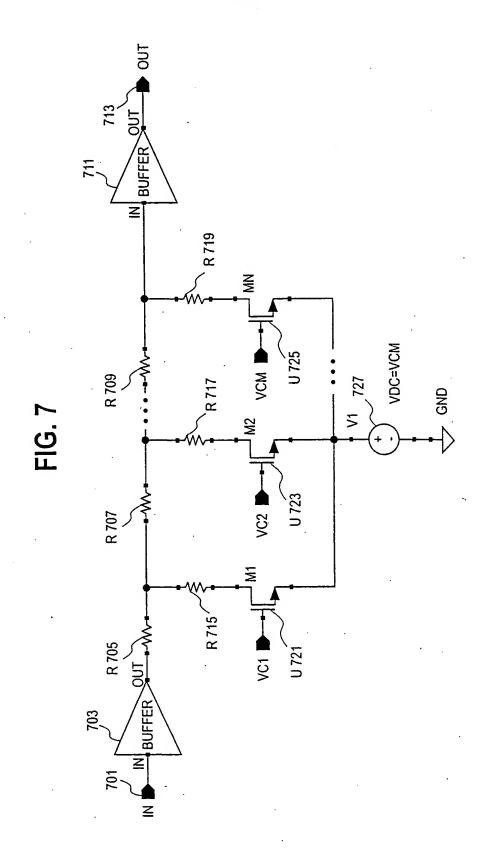


TITLE: GIGABIT ETHERNET TRANSCEIVER WIT ANALOG FRONT END INVENTOR: BEHZAD APPLICATION NO.: UNASSIGNED, CONF. NO. ; DOCKET NO. 13432US06 ATTORNEY: JAW, PHONE: 312-775-8000





TITLE: GIGABIT ETHERNET TRANSCEIVER WIT ANALOG FRONT END INVENTOR: BEHZAD APPLICATION NO.: UNASSIGNED, CONF. NO. ; DOCKET NO. 13432US06 ATTORNEY: JAW, PHONE: 312-775-8000



TITLE: GIGABIT ETHERNET TRANSCEIVER WIT ANALOG FRONT END APPLICATION NO.: UNASSIGNED, CONF. NO. ; DOCKET NO. 13432US06 DOCKET NO. 13432US06 ATTORNEY: JAW, PHONE: 312-775-8000 OUT 7/28 BUFFER 821 Z R2N M2N VDC=VCM 819 GND J SLICES R. R 809 R 815' N STAGES PER SLICE **R** 823 R 807 JM11 VC12 R 811 U 819 R 805 100 TO 817 BUFFER

TITLE: GIGABIT ETHERNET TRANSCEIVER WIT ANALOG FRONT END INVENTOR: BEHZAD

APPLICATION NO.: UNASSIGNED, CONF. NO. ; DOCKET NO. 13432US06 ATTORNEY: JAW, PHONE: 312-775-8000

FIG. 9 PRIOR ART

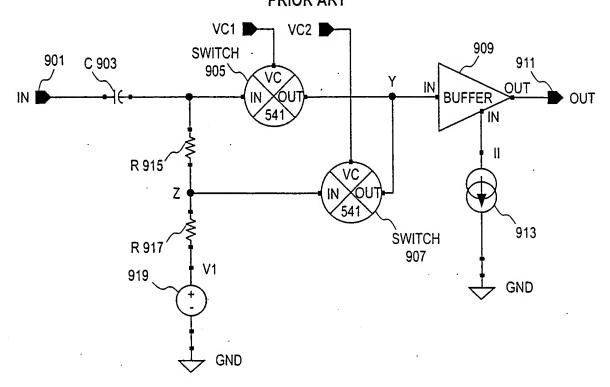
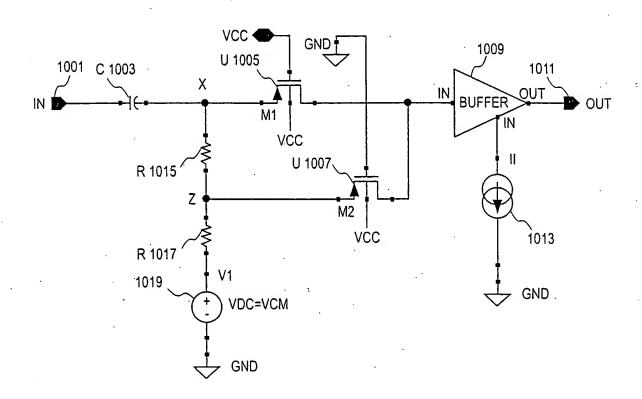


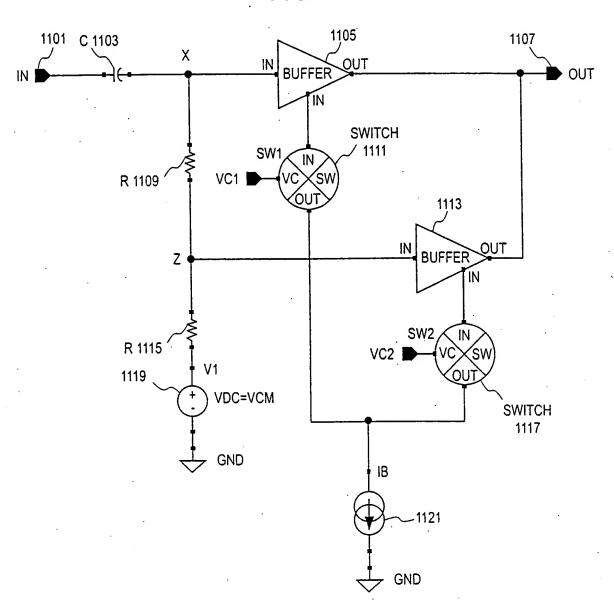
FIG.10 PRIOR ART



TITLE: GIGABIT ETHERNET TRANSCEIVER WIT ANALOG FRONT END INVENTOR: BEHZAD

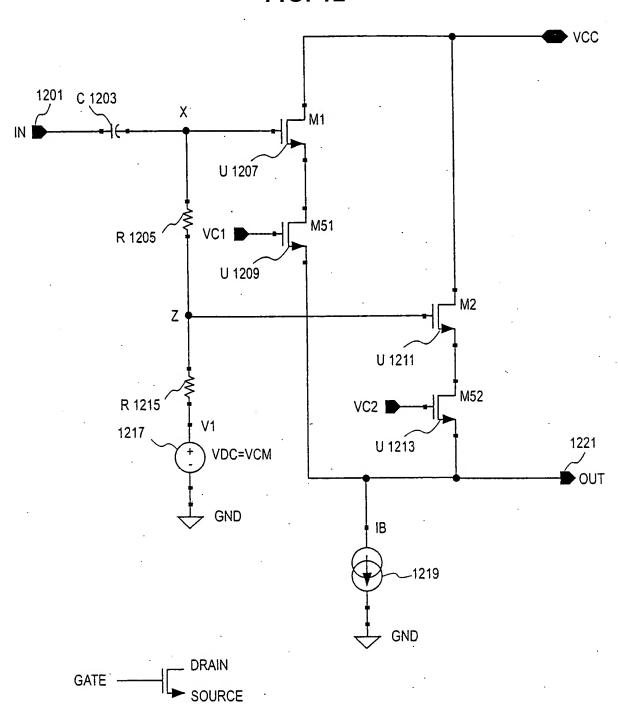
APPLICATION NO.: UNASSIGNED CONF. NO. ; DOCKET NO. 13432US06 ATTORNEY: JAW, PHONE: 312-775-8000

FIG. 11



TITLE: GIGABIT ETHERNET TRANSCEIVER WITH ANALOG FRONT END INVENTOR: BEHZAD APPLICATION NO.: UNASSIGNED, CONF. NO. ; DOCKET NO. 13432US06 ATTORNEY: JAW, PHONE: 312-775-8000

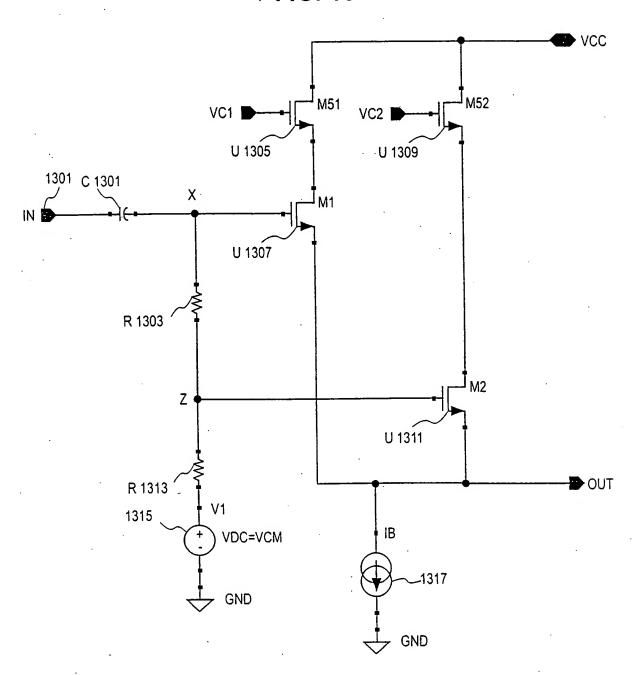
FIG. 12



TITLE: GIGABIT ETHERNET TRANSCEIVER WITH ANALOG FRONT END

INVENTOR: BEHZAD
APPLICATION NO.: UNASSIGNED,
CONF. NO. ; DOCKET NO. 13432US06
ATTORNEY: JAW, PHONE: 312-775-8000

FIG. 13



TITLE: GIGABIT ETHERNET TRANSCEIVER WITH ANALOG FRONT END INVENTOR: BEHZAD APPLICATION NO.: UNASSIGNED, CONF. NO. ; DOCKET NO. 13432US06 ATTORNEY: JAW, PHONE: 312-775-8000 12/28 N TI N U 1419 1931 GND $\underline{\omega}$ M51 U 1407 VDC=VCM GND VC1 5

R 1925

R 1927

1929

R 1923

R 1921

M5N

U 1417

U 1413

C 1403

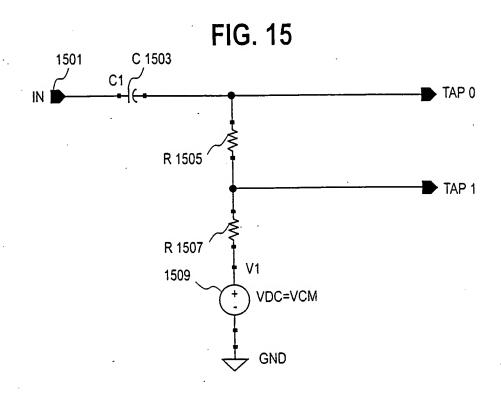
1401

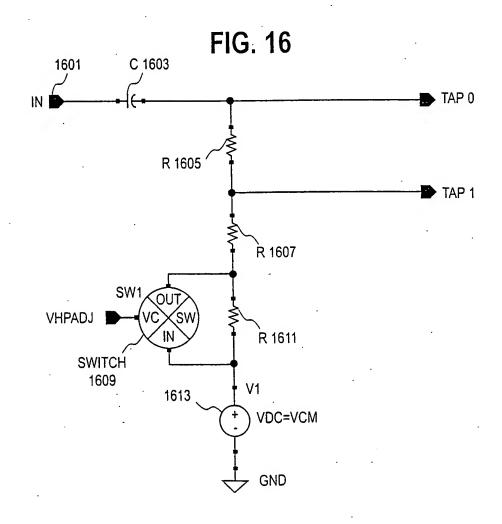
 \mathbf{Z}

TITLE: GIGABIT ETHERNET TRANSCEIVER WITH ANALOG FRONT END INVENTOR: BEHZAD

APPLICATION NO.: UNASSIGNED, CONF. NO. ; DOCKET NO. 13432US06 ATTORNEY: JAW, PHONE: 312-775-8000

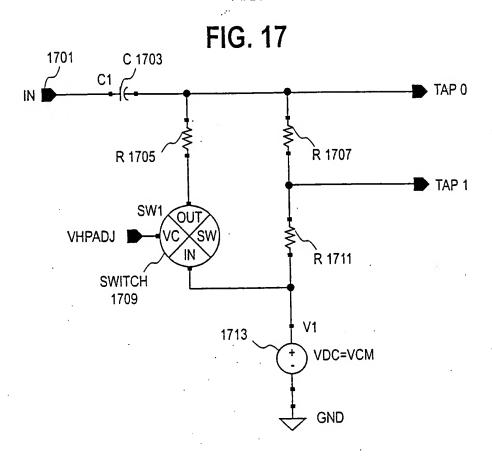
13/28

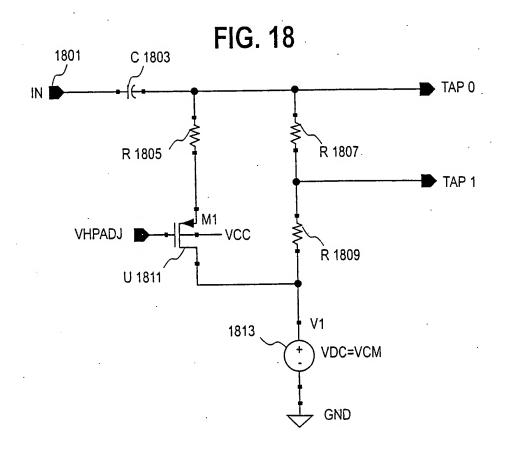




TITLE: GIGABIT ETHERNET TRANSCEIVER WITH ANALOG FRONT END INVENTOR: BEHZAD

INVENTOR: BEHZAD
APPLICATION NO.: UNASSIGNED,
CONF. NO. ; DOCKET NO. 13432US06
ATTORNEY: JAW, PHONE: 312-775-8000



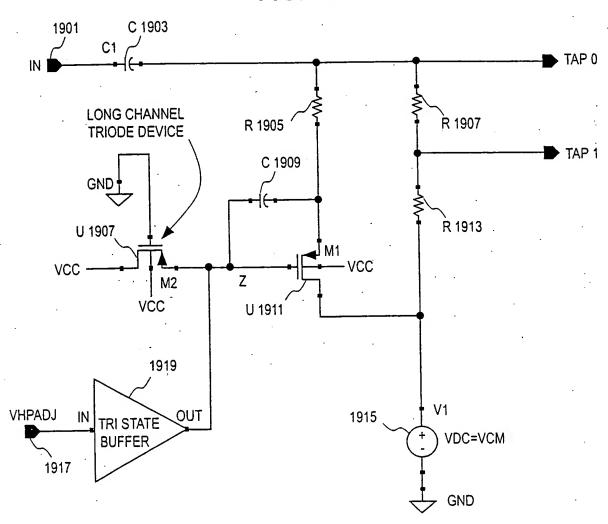


TITLE: GIGABIT ETHERNET TRANSCEIVER WITH ANALOG FRONT END

INVENTOR: BEHZAD

APPLICATION NO.: UNASSIGNED, CONF. NO. ; DOCKET NO. 13432US06 ATTORNEY: JAW, PHONE: 312-775-8000

FIG. 19



TITLE: GIGABIT ETHERNET TRANSCEIVER WITH ANALOG FRONT END INVENTOR: BEHZAD APPLICATION NO.: UNASSIGNED, CONF. NO. ; DOCKET NO. 13432US06 ATTORNEY: JAW, PHONE: 312-775-8000 16/28 TAP 0 VDC=VCM Ř 2009 GND 5 C 2017 R 2007 U 2019 CIM OUT LONG CHANNEL TRIODE DEVICE TRI STATE BUFFER FIG. 20 GND VCC Z VHPADJ M19 C 2013 R 2005 U 2015 5 LONG CHANNEL TRIODE DEVICE M21 C 2003 TRI STATE BUFFER es es \mathcal{D} U 2011 Z SCC 2001 VHPADJN Z

TITLE: GIGABIT ETHERNET TRANSCEIVER WITH ANALOG FRONT END INVENTOR: BEHZAD APPLICATION NO.: UNASSIGNED, CONF. NO. ; DOCKET NO. 13432US06 ATTORNEY: JAW, PHONE: 312-775-8000 17/28 GND R BUFFER Z R 2117 > **R**6 R 2115 83 R 2113 74 R 2111 83 \mathbb{Z} 쮼 100,

BUFF

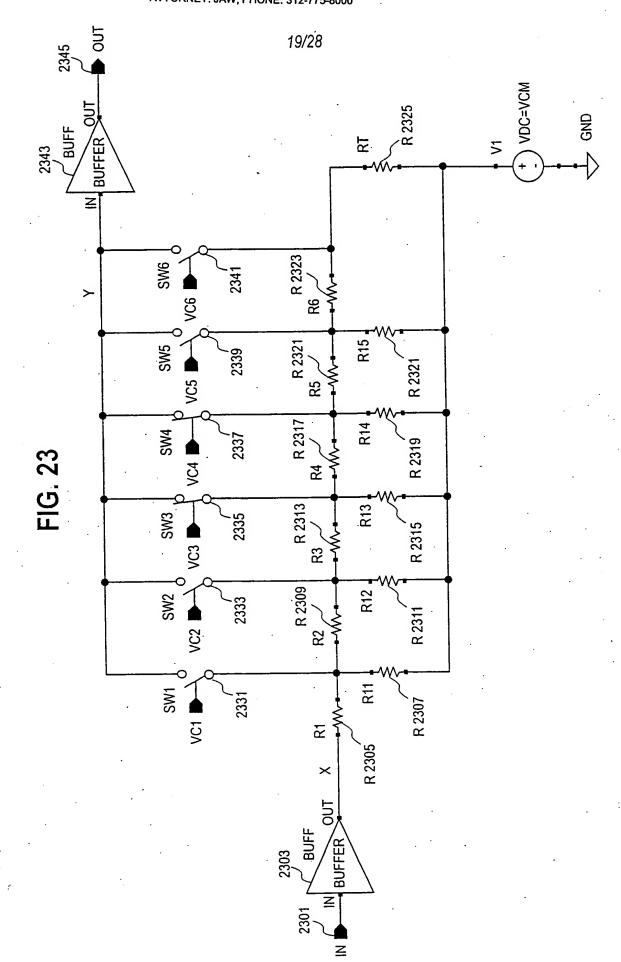
BUFFER

FIG. 21

BUFF

FIG. 22

TITLE: GIGABIT ETHERNET TRANSCEIVER
WITH ANALOG FRONT END
INVENTOR: BEHZAD
APPLICATION NO.: UNASSIGNED,
CONF. NO. ; DOCKET NO. 13432US06
ATTORNEY: JAW, PHONE: 312-775-8000

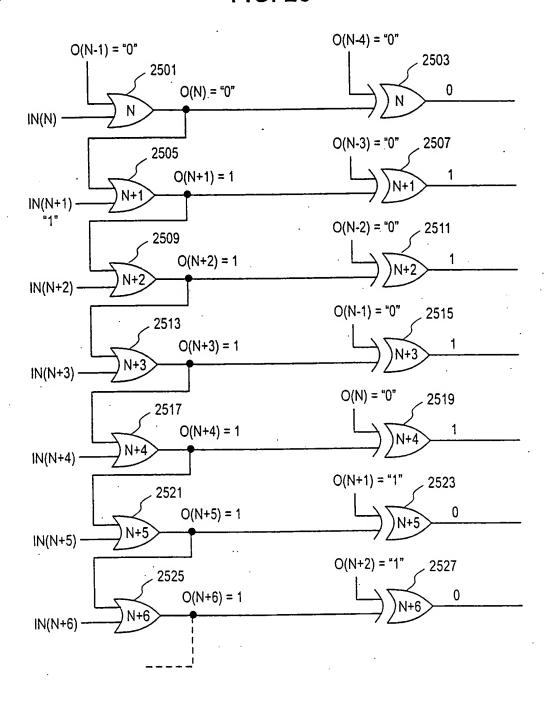


INVENTOR: BEHZAD
APPLICATION NO.: UNASSIGNED,
CONF. NO. ; DOCKET NO. 13432US06
ATTORNEY: JAW, PHONE: 312-775-8000 20/28 R 2429 GND BUFF R BUFFER 2447 Z R 2431 R 2429 SW7 **R**7 R16 R 2423 SW6 R 2427 92A R6 SW5 R15 R 2421 R 2425 **R**5 FIG. 24 **R14** R 2415 R 2419 **R**4 R 2409 R13, SW3 VC3 ► OUT P OUT N RO R437 RO N R 2417 83 R12 R 2407 R 2413 R_2 R11 VC1 쮼 2403 BUFF BUFFER

TITLE: GIGABIT ETHERNET TRANSCEIVER WITH ANALOG FRONT END

TITLE: GIGABIT ETHERNET TRANSCEIVER WITH ANALOG-FRONT END INVENTOR: BEHZAD APPLICATION NO.: UNASSIGNED, CONF. NO. ; DOCKET NO. 13432US06 ATTORNEY: JAW, PHONE: 312-775-8000

FIG. 25



TITLE: GIGABIT ETHERNET TRANSCEIVER WITH ANALOG FRONT END INVENTOR: BEHZAD APPLICATION NO.: UNASSIGNED, CONF. NO. ; DOCKET NO. 13432US06

ATTORNEY: JAW, PHONE: 312-775-8000

22/28 C 0 C = 45F = 45F464 OHM = 14 * 32 + 32/2 VC<20:23> VCC O O. GND 0 ٥z ZΖ R 0 R 8 R 3 R = 464 2611 OUT N SOUT N N N N N VC<16:19> VCC GND 0 2617 ۵z zz OUT P OUT N RO P RO P VC<28:31> VCC GND 0 VC<12:15> VCC OUT P ROP P ROP N ٥Z FIG. 26 zz GND 0 d z Z Z 2607 - ROLL NON-ROP N VC<24:27> VC<8:12> VCC ٥z ZΖ GND ٩Z 2613 2605 VC<4:7> \ d Z Z Z 2603 SSS SOUT N ROPN GND 0 VC<0:31> GND 0 ۵. z 200 z

TITLE: GIGABIT ETHERNET TRANSCEIVER WITH ANALOG FRONT END INVENTOR: BEHZAD APPLICATION NO .: UNASSIGNED,

CONF. NO. ; DOCKET NO. 13432US06 ATTORNEY: JAW, PHONE: 312-775-8000

FIG. 27

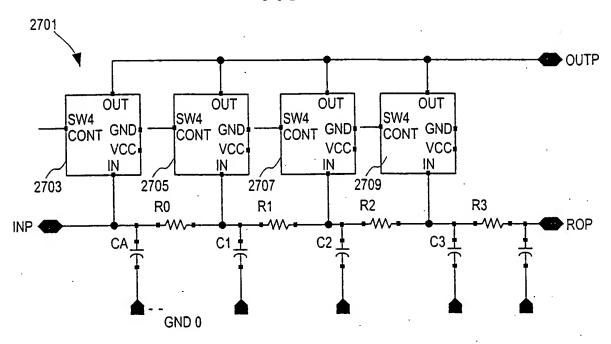
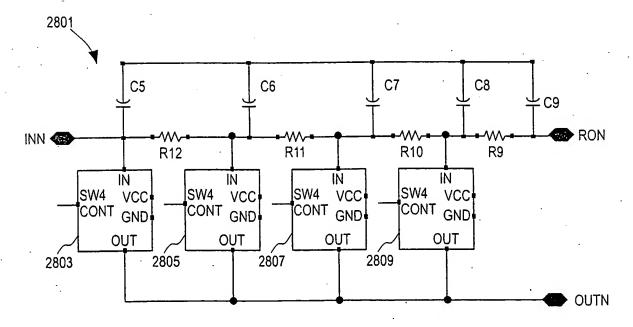
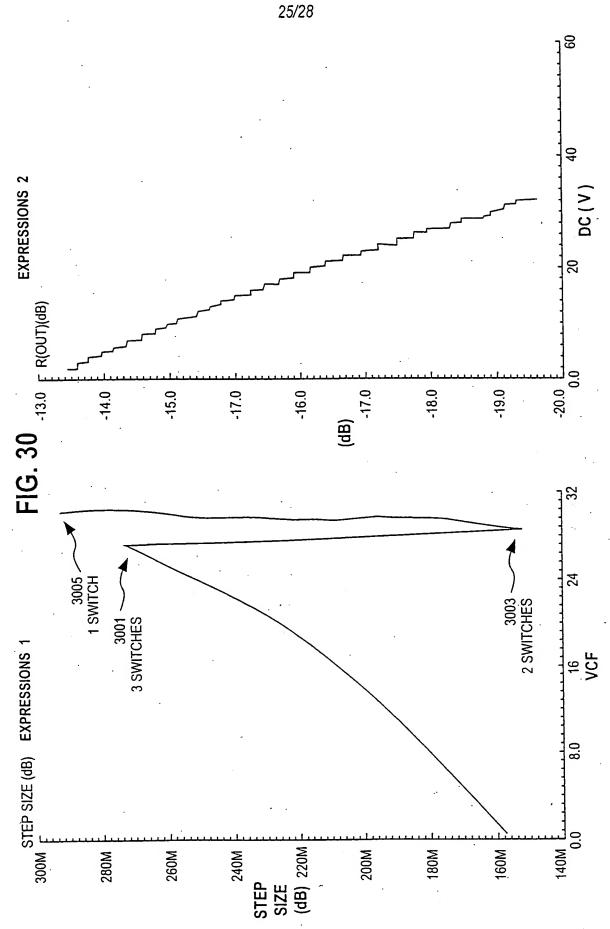


FIG. 28



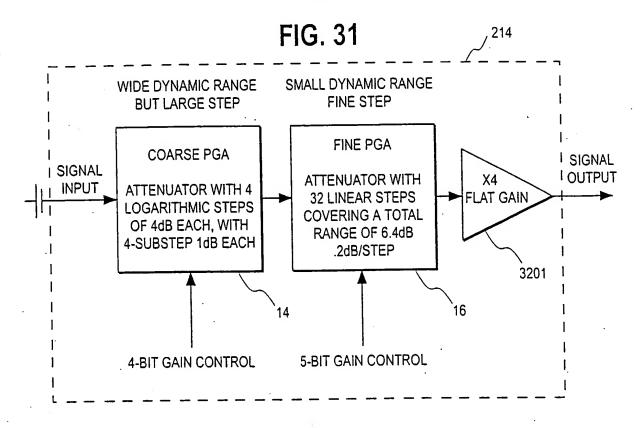
TITLE: GIGABIT ETHERNET TRANSCEIVER WITH ANALOG FRONT END INVENTOR: BEHZAD APPLICATION NO.: UNASSIGNED, CONF. NO. ; DOCKET NO. 13432US06 ATTORNEY: JAW, PHONE: 312-775-8000 24/28 4SWI FREQUENCY RESPONSE 1 SWITCH ON (EFFECT ON BW) 100M 2901 2903 10M FIG. 29 (dB)-40 99--30 -20 50 MEASURED EXPRESSIONS 16 VCF **DB10 MHZ GAIN DB MAX GAIN** DBHPBW **308HPBW** 1DBIPBW 3DBIPBW 8.0 70.0M 4.810M 240M 4.930M 4.870M 160M 110M 8.80M 180M 120M -16.0 210M 8.60M 170M 120M -13.0 8.40

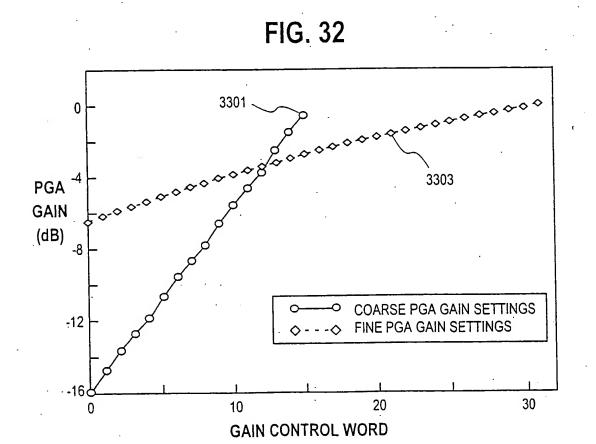
TITLE: GIGABIT ETHERNET TRANSCEIVER
WITH ANALOG FRONT END
INVENTOR: BEHZAD
APPLICATION NO.: UNASSIGNED,
CONF. NO. ; DOCKET NO. 13432US06
ATTORNEY: JAW, PHONE: 312-775-8000



TITLE: GIGABIT ETHERNET TRANSCEIVER WITH ANALOG FRONT END INVENTOR: BEHZAD

APPLICATION NO.: UNASSIGNED, CONF. NO. ; DOCKET NO. 13432US06 ATTORNEY: JAW, PHONE: 312-775-8000





INVENTOR: BEHZAD
APPLICATION NO.: UNASSIGNED,
CONF. NO. ; DOCKET NO. 13432US06
ATTORNEY: JAW, PHONE: 312-775-8000 27/28 **COARSE GAIN FAGCOVFLW FINE GAIN** 3321 **U**5.0 3328 LOAD LOAD FINE GAIN CONTROL COARSE GAIN CONTROL **U19.15 U23.18** 3325 3319 SELECT SELECT 0 MOX ¥ 3323 0 3317 NOTE 2 NOTE 1 NOTE 2: SATURATES AT LEVELS 2^{23} -1 AND 0, AND SETS FAGCOVFLW UPON SATURATION NOTE3: FAGCOVFLW IS RESET ONLY BY FAGCRST 7X2¹⁵ 15X2¹⁸ 3315 ERROR FIG. 33 3313 3309 **U14.7** LOAD SELECT Σ Z-128 0 3307 CLEAR (CAGCRST II ~ CAGCFRZ) && AGCSAMPO (FAGCRST II ~ FAGCFRZ) && AGCSAMPO NOTE 1: SATURATES AT LEVELS 2¹⁹-1 AND 0 **U14.7** 3303 3305 \geq 3311 **S8.7** 3301 AD FIFO OUT (216) CAGCHIGEAR REF. LEVEL (22) AGCSAMPO CAGCRST **FAGCRST**

TITLE: GIGABIT ETHERNET TRANSCEIVER WITH ANALOG FRONT END

ANALOG FRONT END
INVENTOR: BEHZAD APPLICATION NO.: UNASSIGNED, CONF. NO. ; DOCKET NO. 13432US06 ATTORNEY: JAW, PHONE: 312-775-8000

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FIG. 34

CABLE LENGTH (m)	100 BASE- TX	GIGABIT, 100 OHM	GIGABIT, 85 OHM	GIGABIT, 115 OHM
0	3.691281	4.193192	4.193192	4.193192
20	3.806628	4.501316	4.362110	4.291369
40	3.877284	4.528136	4.457336	4.429949
60	3.894216	4.733644	4.695307	4.646305
80	4.055372	4.878569	4.847844	4.810019
100	4.225522	4.983545	4.991296	4.968900
120	4.357733 '	5.134131	5.194401	5.154263
140	4.556012	5.266919	5.380943	5.366309
160	4.764462	•	-	-

TARGET E{IXI} = A/D CLIPPING LEVEL X (E{IXI}/RMS)/(PEAK/RMS) = $127 \times 0.7979/5.2 = 20$